MANAGEMENT

The [Mission Name] is a PI-lead Mission whose mission and related support activities will be the joint responsibilities of [Principal Investigator team] and NASA Ames Research Center (ARC). The [Mission Name] management structure is shown in [1]Figure X.X. Specific definitions for NASA Procedural Requirements (NPR) 7120.5D elements of this structure are provided in the work breakdown structure (WBS) dictionary below.

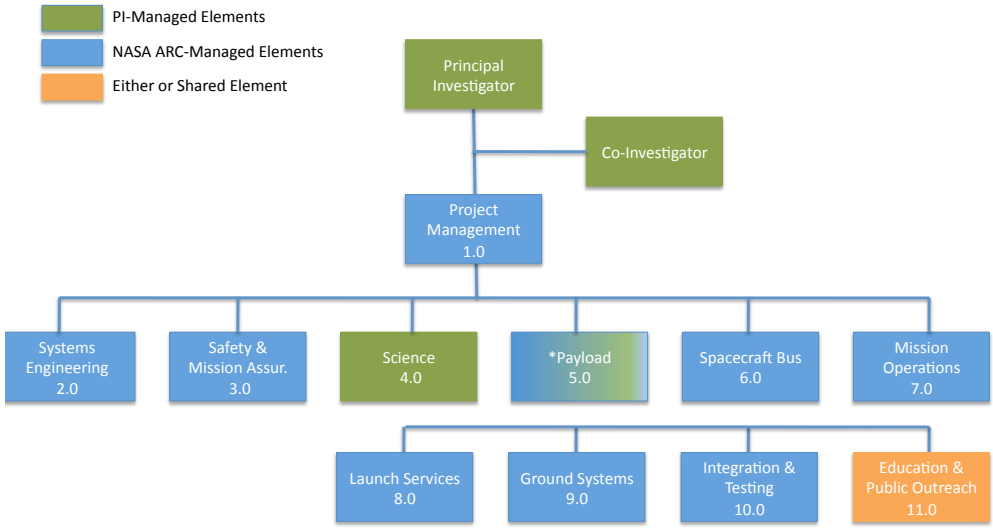

Figure X.X [Mission Name] Management Organization

NASA ARC will provide mission management for the [Mission Name] and will perform all mission operations through the Small Spacecraft Division to include the coordination of the spacecraft, launch vehicle and mission operations interfaces. All elements of ARC contributions will be supported by the Program and Project Management Directorate, Code P; the System Safety & Mission Assurance Division, Code QS; and the Engineering Directorate, Code R.

In addition, the development of the science [and Technology-MoO2] component(s) is [are] managed by the principal investigator team [and NASA ARC-MoO-2]. The purpose of this function is to [complete as appropriate].

The [Principal Investigator team] will provide management for science development, [Instrument Development-MoO2], data analysis, education and outreach functions. [Add additional content as appropriate].

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[1]A point to note: for MoO-1 NASA ARC performs all work under element 5.0 whereas for MoO-2, efforts under element 5.0 are shared between NASA ARC and the Principal Investigator team as indicated by the color gradient shown in the figure.

Management tools, such as [Examples: ARC-developed NX Knowledge Network; Process Based Mission Assurance (PBMA) collaborative environment] will be used in support of [Mission Name]. These existing tools and processes have proven to be quite effective in supporting project management functions in projects such as [Examples: LCROSS, Genesat-1 & PharmaSat].

The [Mission Name] will be managed in accordance with NPR 7120.5D, as a Category III, Class D Mission. An integrated management team consisting of key leads from [Principal Investigator team] and NASA ARC will augment the [Principal Investigator team] and NASA Ames teams to provide oversight and insight during the mission lifecycle.

[Mission Name] will be managed according to the major milestone dates and activity schedule as provided in [2]Table X.X below.

Milestone	**Duration**
Project Start	
Science/Mission Definition	45 Days
Technology/Instrument Definition	180 Days
SRR	2 Months from Start
Flight Prototype Development	180 Days
PDR	4.5 Months from Start
Spacecraft/Hardware/Software Development	100 Days
CDR	7 Months from Start
Spaceflight Systems Integration and Test	50 Days
FRR	13 Months from Start
Mission Integration	14 Days
MRR	14 Months from Start
Launch	15 Months from Start
Mission Operations / Data Acquisition	45 Days
Post Mission Operations	30 Days
Mission Final Report	1 Year from Mission

Table X.X [Mission Name] Milestone and Activity Schedule

[2] The time durations listed in Table X.X are based on a typical nanosatellite mission schedule timeline.

WBS Dictionary

The [Mission Name] WBS Dictionary provides management clarity and allocation points for deliverables. [Mission Name] has a complete mission-unique WBS (Figure X.X) in addition to the standard 11 cost elements defined in NPR 7120.5D, as listed below.

Element 1 - Project Management: The business and administrative planning, organizing, directing, coordinating, analyzing, controlling, and approval processes used to accomplish overall project objectives, which are not associated with specific hardware or software elements. This element includes project reviews and documentation, non-project owned facilities, and project reserves. It excludes costs associated with technical planning and management and costs associated with delivering specific engineering, hardware and software products. The PI and PM team will include ARC management advisors providing input on science issues and best practices for management of project performance.

Element 2 - Systems Engineering: The technical and management efforts of directing and controlling an integrated engineering effort for the project. This element includes the efforts to define the project space flight vehicle(s) and ground system, conducting trade studies, the integrated planning and control of the technical program efforts of design engineering, software engineering, specialty engineering, system architecture development and integrated test planning, system requirements writing, configuration control, technical oversight, control and monitoring of the technical program, and risk management activities. Documentation products include requirements documents, interface control documents (ICDs), risk management plan, and master verification and validation (V&V) plan. Excludes any design engineering costs. The project SE function will include ARC technical advisors for review of technical progress and suggestions for coordinating the resolution of technical issues.

Element 3 - Safety and Mission Assurance: The technical and management efforts of directing and controlling the safety and mission assurance elements of the project. This element includes design, development, review, and verification of practices and procedures and mission success criteria intended to assure that the delivered spacecraft, ground systems, mission operations, and payload(s) meet performance requirements and function for their intended lifetimes. This element includes mission and product assurance efforts for review/oversight function, and the direct costs of environmental testing.

Element 4 - Science / Technology: This element includes the managing, directing, and controlling of the science investigation aspects, as well as leading, managing, and performing the technology demonstration elements of the Project. The costs incurred to cover the Principal Investigator, Project Scientist, science team members, and equivalent personnel for technology demonstrations are included. Specific responsibilities include defining the science or demonstration requirements; ensuring the integration of these requirements with the payloads, spacecraft, ground systems, and mission operations; providing the algorithms for data processing and analyses; and performing data analysis and archiving. This element excludes hardware and software for onboard science investigative instruments/payloads. The PI team will include ARC management advisors providing input on science issues and best practices for science teaming and operations.

Element 5 - Payload: This element includes the equipment provided for special purposes in addition to the normal equipment (i.e., GSE) integral to the spacecraft. This includes leading, managing, and implementing the hardware and software payloads that perform the scientific experimental and data gathering functions placed on board the spacecraft, as well as the technology demonstration for the mission. The P/L engineering team will to review technical specifications and design details and consult on issues of technical performance and product assurance.

Element 6 - Spacecraft: The spacecraft that serves as the platform for carrying payload, instrument, and other mission-oriented equipment into space to the mission destination to achieve the mission objectives. The spacecraft will be a single module. Each spacecraft/module of the system includes the following subsystems, as appropriate: Power, Command & Data Handling, Telecommunications, Mechanical, Thermal, Propulsion, Guidance Navigation and Control, Wiring Harness, and Flight Software. This element also includes all design, development, production, assembly, test efforts, and associated GSE to deliver the completed system for integration with the launch vehicle and payload. This element does not include integration and test with payloads and other project systems. The S/C engineering team will include a representative from ARC to review technical specifications and design details and consult on issues of technical performance and product assurance.

Element 7 - Mission Operations System: The management of the development and implementation of personnel, procedures, documentation, and training required to conduct mission operations. This element includes tracking, commanding, receiving/processing telemetry, analyses of system status, trajectory analysis, orbit determination, maneuver analysis, target body orbit/ephemeris updates, and disposal of remaining end-of-mission resources. The same WBS structure is used for Phase E Mission Operation Systems but with inactive elements defined as "not applicable." However, different accounts must be used for Phase E due to NASA cost reporting requirements. This element does not include integration and test with the other project systems.

Element 8 - Launch Vehicle / Services: The management and implementation of activities required to place the spacecraft directly into its operational environment, or on a trajectory towards its intended target. This element includes launch vehicle, launch vehicle integration, launch operations, any other associated launch services (frequently includes an upper-stage propulsion system), and associated ground support equipment. This element does not include the integration and test with the other project systems.

Element 9 - Ground System(s): The complex of equipment, hardware, software, networks, and mission- unique facilities required to conduct mission operations of the spacecraft systems and payloads. This complex includes the computers, communications, operating systems, and networking equipment needed to interconnect and host the Mission Operations software. This element includes the design, development, implementation, integration, test, and the associated support equipment of the ground system, including the hardware and software needed for processing, archiving, and distributing telemetry and radiometric data and for commanding the spacecraft. Also includes the use and maintenance of the project testbeds and project-owned facilities. This element does not include integration and test with the other project systems and

conducting mission operations.

Element 10 - Systems Integration and Testing: This element includes the hardware, software, procedures, and project-owned facilities required to perform the integration and testing of the project's systems, payloads, spacecraft, launch vehicle/services, and mission operations.

Element 11 - Education and Public Outreach: Provide for the E/PO responsibilities of NASA's missions, projects, and programs in alignment with the Strategic Plan for Education. Includes management and coordinated activities, formal education, informal education, public outreach, media support, and website development.